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ART. 113.—*Camellia Japonica, or Japan Rose, with an account of some new varieties from seed—by* MICHAEL FLOY, *Nursery and Seedsman, New York.* [Read before the Hort. Soc. July 1828.]

The Camellias are very beautiful and interesting, and so desirable in a green-house collection of plants, (as they flower in the highest perfection in the winter season,) that a green-house cannot be said to be complete without them. The flowers are large and showy, and of various colors, from the purest white to almost black, making a splendid show at a season when few flowers are to be seen. They exhibit themselves in various colors and shapes; and it is therefore no matter of surprize that cultivators have exerted themselves to increase their variety, sparing no pains nor expense for that purpose.

The Camellias were first introduced into Europe from China and Japan: the first kind introduced into England was the single red, and according to *Hortus Kewensis*, in the year 1739. Since that period a number of double and beautiful kinds have been imported from China; but it also appears that many fine kinds have been raised in England from seed produced in that country, and perhaps in other parts of Europe, of which we have no certain knowledge. Messrs. Buckingham and Chandler, noted cultivators of this fine tribe of plants, have published a kind of Monograph with colored plates, of seven sorts, which they raised from seeds, and which they call *Camellia Brittannica*. Several other sorts have been raised also by different growers, the names of some of which we have heard. Mr. Knight, also a great cultivator, is said to have raised several fine new sorts; and, according to the Gardener's Magazine, published by Mr. Loudon, (a work which every gardener in America ought to take, as the best on gardening now extant, for the useful and scientific manner in which all new discoveries are exhibited,) gives an account of five fine sorts, which Mr. Press raised from seed and exhibited before the London Horticultural Society. So that the number of fine kinds of Camellias must now be pretty extensive; and as it may soon be a matter of doubt with us in this country what kinds are Chinese, and what kinds have originated in other places, it is to be hoped that Mr. Loudon or some of his correspondents will favor us with a list of all the good sorts that are distinct, with a short description of them, and also stating what kinds have originated and what kinds have been imported. I subjoin a list of the sorts which I believe to be Chinese, and those kinds that are doubtful: in this respect I hope to be corrected.—1st, Single red; 2d, Double red; 3d, Double rose, or Middlemists; 4th, Anemone flowering, or *Warratah*; 5th, Double dark red, or *Atrorubens*; 6th, Double myrtle leaved sweet scented; 7th, Single white; 8th, Double white; 9th, *Incarnata*, or Lady Hume's Blush; 10th, *Flavescens*, or Buff, perhaps not distinct from the former; 11th, *Pomponia*, or Kewblush; 12th, *Pæoniflora*, or *pæoney* flowered; 13th, *Sesanqua alba*, or Lady Bank's Tea; 14th, *Sesanqua rosea plena*; 15th, *Oleifera*, olive leaved, or oil-bearing Camellia; 16th, Striped, or carnation Camellia, red and white. Some information is required as to the origin of the following kinds: 17th, *Rubicaulis*; 18th, *Coccinea*; 19th, *Longifolia*; 20th, *Welbankiana*; 21st, *Fimbriata*; 22d, *Crassinervis*; 23d, *Conchiflora*. There may be several other kinds besides these enumerated by Buckingham and Chandler, Mr. Knight and Mr. Press, as well as the above-mentioned;* but it also appears that in this country we possess equal advantages to produce some fine kinds from seed; and indeed it must be allowed that our climate is much nearer to the Chinese climate than any part of Europe: they perfect their seeds well, and from the samples which have already shown themselves, some beautiful new sorts might be expected. The drawings of the Seedling Camellias which flowered with me last winter for the first time, (and which have been taken very accurately by a lady of this city, an artist of great talent, surpassed by none in taking flowers from nature,) I submit to the inspection of the Society. The kind figured No. 1, I have named *Camellia Clintonia*, in memory of our late worthy Governor, who, in addition to the valuable services rendered to our country, was also a friend and promoter of the New York Horticultu-

* The Gardener's Magazine, by Mr. Loudon, of February 1826, page 220, describes a Camellia called *Glorioza*, a seedling obtained by the late Mr. Ross, and represents it as a double red variety of the *Warratah* kind, and mentions 40 varieties at Mr. Mackay's Nursery at Clapton. Perhaps many of them are incorrectly named, as it is well known that the same variety in several instances has been called two or three names. As the conductor of this work is well able to judge in this matter, and sufficiently disinterested, it will be very desirable for him to do so. The Gardener's Magazine may be obtained from the agents, Messrs. Carey, Lea and Carey at Philadelphia, and Mr. Wardle, of New-York.

ral Society. This flower is of the *Warratah*, or Anemone flowering kind; the petals are of a bright red color, the centre the same color, striped with white; the flower is regular and even, and somewhat resembles Mr. Chandler's kind, which he calls *Insignis*, but the color is different, and the centre more regular, to judge by the drawing given of it. This kind first flowered with me in the winter of 1825—the seed was sown in 1821. No. 2 I have called *Camellia Hoffmania*, in memory of our late worthy President, Martin Hoffman, Esq., whose exertions to promote the welfare of our Society are well known to the members, and held in grateful remembrance. The flowers of this kind are also of the *Warratah* kind, but every way different from the last, having three rows of outside petals, the inner parts strap-shaped, touched with white, forming a beautiful double flower, the color bright and glossy, approaching very near to scarlet, forming an hexangular appearance, somewhat in the manner of the *Incarnata*. No. 3 I have called for the present *Camellia Elegans*. This is a very beautiful kind, the colors nearly of a bright scarlet, smooth and glossy; the petals are perfectly rose-edged, laying flat and regular, much in the manner of the double white, and about the same size, without any show of stamina or pistilla, completely double: it appears to be the handsomest of all the reds yet known. The *Myrtifolia* is the only kind that can compete with it; but the mode of flowering is very different: the Myrtifolia is a very beautiful double flower, showing distinctly two colors, forming a flower rather cup-shape, which does not show it off to the advantage that this kind does, which is an open flat flower. No. 4 I have called *Camellia Multiflora* for the present, from the quantity of flowers which it produces. The flowers are single, nearly scarlet, almost double the size, of the common red; the petals are rose-edged, flowers expanding, the foliage of the plant large, very thrifty and vigorous. The whole plant when in flower, makes a very splendid appearance—the bright glossy color of the flower, with the brilliant yellow stamina, setting it off to great advantage. It may be considered valuable as a breeder, as it sets its fruit very readily. There is plenty of pure seed pods on it at present. No. 5 I have called *Camellia Grandiflora*. This is also a single scarlet flower, the flower very large, nearly five inches in diameter, expanding, and is, as far as I can learn, the largest single Camellia known. The petals are even-shaped and rose-edged—the color a bright red, smooth and glossy, the anthers a bright yellow with white filaments, making a grand appearance; and for a breeder is very desirable, producing seed also very readily. It had only three flowers, which have produced three very large round *Capsules*, as large as middle-sized apples. No. 2, 3, 4 and 5, flowered with me for the first time last winter: the seed was sown in 1823. I have a quantity of fine plants of the same year's sowing, which I expect to flower this winter; and from their appearance some fine sorts may be expected. I have also two plants of the sowing of 1821; one of them has leaves larger than any other. I have got the other, a very long slender leaf. I have seed pods formed also on the old double red, the Middlemist, and the *Warratah*—the pods are so very different in appearance I shall endeavor to get drawings made from them.

ART. 114.—*Germination of Seed.—Extracted from Loudon's Encyclopedia of Gardening.*

Germination is that act or operation of the vegetative principle by which the embryo is extricated from its envelopes, and converted into a plant. This is universally the first part of the process of vegetation. For it may be regarded as an indubitable fact, that all plants spring originally from seed. The conditions necessary to germination relate either to the internal state of the seed itself, or to the circumstances in which it is placed, with regard to surrounding substances.

The first condition necessary to germination is, that the seed must have reached maturity. Unripe seeds seldom germinate, because their parts are not yet prepared to form the chemical combinations on which germination depends. There are some seeds, however, whose germination is said to commence in the very seed-vessel, even before the fruit is ripe, and while it is yet attached to the parent plant. Such are those of the tangekolli of Adanson, and agave vivipara of East Florida, as well as the cyamus relumbo of Sir J. E. Smith, or sacred bean of India; to which may be added the seeds of the common garden radish, pea, lemon, &c. But these are examples of rare occurrence; though it is sometimes necessary to sow or plant the seed almost as soon as it is fully ripe, as in the case of the coffee-bean, which will not germinate unless it is sown within five or six weeks after it has been gathered. But most seeds, if guarded from external injury, will retain their germinating faculty for a period of many years. This has been proved by the experiment of sowing seeds that have been long so kept; as well as by the deep ploughing up of fields that have been long left without cultivation. A field that was thus ploughed up near Dunkeld, in Scotland, after a period of forty years' rest, yielded a considerable blade of black oats without sowing. It could have been only by the plough's bringing up to the surface seeds that had been formerly too deeply lodged for germination.

The second condition is, that the seed sown must be

defended from the action of the rays of light. This has no doubt been long known to be a necessary condition of germination, if we regard the practice of the harrowing or raking in of the grains or seeds sown by the farmer or gardener, as being founded upon it.

A third condition necessary to germination is the access of heat. No seed has ever been known to germinate at or below the freezing point. Hence seeds do not germinate in winter, even though lodged in their proper soil. But the vital principle is not necessarily destroyed in consequence of this exposure; for the seed will germinate still, on the return of spring, when the ground has been again thawed, and the temperature raised to the proper degree. But this degree varies considerably in different species of seeds, as is obvious from observing the times of their germination, whether in the same or in different climates. For if seeds which naturally sow themselves, germinate in different climates at the same period. or in the same climate at different periods, the temperature necessary to their germination must be different. Now these cases are constantly occurring and presenting themselves to our notice; and have also been made the subject of particular observation. Adanson found that seeds which will germinate in the space of twelve hours in an ordinary degree of heat, may be made to germinate in the space of three hours by exposing them to a greater degree of heat; and that seeds transported from the climate of Paris to that of Senegal, have their periods of germination accelerated from one to three days. Upon the same principle, seeds transported from a warmer to a colder climate, have their period of germination protracted till the temperature of the latter is raised to that of the former. This is well exemplified in the case of green-house and hot-house plants, from which it is also obvious that the temperature must be raised beyond a certain degree, otherwise the vital principle is wholly destroyed.

A fourth condition necessary to germination is the access of moisture. Seeds will not germinate if they are kept perfectly dry. Water, therefore, or some liquid equivalent to it, is essential to germination. Hence rain is always acceptable to the farmer or gardener, immediately after he has sown his seeds; and if no rain falls, recourse must be had, if possible, to artificial watering. But the quantity of water applied is not a matter of indifference. There may be too little, or there may be too much. If there is too little, the seed dies for want of moisture; if there is too much, it then rots. The case is not the same, however, with all seeds. Some can bear but little moisture, though others will germinate when but partially immersed; as was proved by an experiment of Du Hamel's, at least in the case of peas, which he placed merely upon a wet sponge, so as to immerse them by nearly the one half, and which germinated as if placed in the soil. But this was found the most they could bear; for when totally immersed in the water they rotted. There are some seeds, however, that will germinate even when wholly submersed. The seeds of aquatics must of necessity germinate under water; and peas have been also known to do so under certain conditions.

A fifth condition necessary to germination is the access of atmospheric air. Seeds will not germinate if placed in a *vacuum*. Ray introduced some grains of lettuce-seed into the receiver of an air-pump, which he then exhausted. The seeds did not germinate. But they germinated upon the re-admission of the air, which is thus proved by consequence to be necessary to their germination. Achard proved that no seed will germinate in nitrogen gas, or carbonic acid gas, or hydrogen gas, except when mixed with a certain proportion of oxygen gas; and hence concluded that oxygen gas is necessary to the germination of all seeds, and the only constituent part of the atmospheric air which is absolutely necessary. Humbolt found that the process of germination is accelerated by means of previously steeping the seed in water impregnated with oxymuriatic acid. Cress-seed treated in this manner germinated in the space of three hours, though its ordinary period of germination is not less than thirty-two hours.

The period necessary to complete the process of germination is not the same in all seeds, even when all the necessary conditions have been furnished. Some species require a shorter, and others a longer period. The grasses are among the number of those plants whose seeds are of the most rapid germination; then perhaps cruciform plants; then leguminous plants; then labiate plants; then umbelliferous plants; and in the last order rosaceous plants, whose seeds germinate the slowest. The following table indicates the periods of the germination of a considerable variety of seeds, as observed by Adanson:

	Days.
Wheat, Millet-seed,	1
Spinage, Beans, Mustard,	3
Lettuce, Aniseed,	4
Melon, Cucumbers, Cress-seed,	5
Radish, Beet-root,	6
Barley,	7
Orache,	8
Purslain,	9
Cabbage,	10
Hyssop,	30
Parsley,	40 or 50
Almond, Chesnut, Peach,	1 year
Rose, Hawthorn, Filbert,	2 years

[For the N. Y. Farmer and Horticultural Repository.]

ART. 115.—*A short Treatise on Botany.—Continued from page* 132, *No.* 6.

One of the most important subjects in the study of Botany is the arrangement of plants according to certain systems: without this it would be impossible to make any advances in the knowledge of natural objects; and it would be equally impossible to retain the discoveries which are made for future progress. There are two kinds of systems in general use—the natural and the artificial. The natural classification is an arrangement of plants according to a similarity in the structure of their fruit and flowers, and in the mode in which the seed germinates. This is a very difficult system, and requires an intimate knowledge of plants in their manner of growth and the anatomy of their fruit and seed. Hence it has not been generally adopted. The true natural arrangement of plants according to their real affinities is a subject which the greatest Botanists in all countries have proposed for their investigation, and is still in an unsettled and progressive state.

The artificial arrangement is one wherein the number or proportion of certain external parts of the flower and fruit is adopted, and a mere agreement in these particulars is made the ground of associating near each other plants, however different in their nature and qualities. This classification is so convenient for general use, though liable to many exceptions, that Botanists of all countries have adopted it.

The principal authors of the two systems are, Jussieu, a celebrated French Botanist, who has brought the natural system to a high degree of perfection, and Linnæus, the immortal Swede, is the author of the artificial system which is named after him, the Linnæan system.

Linnæus himself distributed the whole vegetable system into twenty-four classes; but his successors have generally restricted it to twenty-two. These classes were subdivided into *orders;* these orders into *genera*, and the genera into *species;* so that the classification resembled the military division of *brigades, regiments, companies* and *soldiers*, corresponding to *classes, orders, genera* and *species*. The simplicity of the characters which he selected as the foundation of his system, is no less remarkable than complete and uniform, the stamina being the basis of the whole.

The number alone of the stamina characterizes the first ten classes, the names of which were taken from the Greek numerals, adding *andria* to each, viz.:—

The	1st	class,	Monandria,	one stamen.
"	2d	"	Diandria	two "
The	3d	class,	Triandria	three stamina.
"	4th	"	Tetrandria	four "
"	5th	"	Pentandria	five "
"	6th	"	Hexandria	six "
"	7th	"	Heptandria	seven "
"	8th	"	Octandria	eight "
"	9th	"	Enneandria	nine "
"	10th	"	Decandria	ten "

The 11th class contained all plants whose number of stamina were 12 and upwards to 19, (the number 11 not being found in plants,) and was called Dodecandria.

The 12th class contained plants with more than 19 stamina, but regard was had to their insertion, which in this class was into the calyx or corolla, and not into the receptacle. It was called Icosandia.

The 13th class was named Polyandria, and contained more than 19 stamina, which were inserted into the receptacle.

The number of the stamina does not answer for any of the succeeding classes, but in the two next it is the proportion of number in length which is the distinguishing mark.

The 14th is called Didynamia, (signifying the power or excess of two,) and comprizes plants with 4 stamina, but two of them are longer than the other two.

The 15th class is called Tetradynamia, (which signifies excess of 4,) and the plants in it contain 6 stamina, but four of them are longer than the remaining two.

The basis of the two next classes is the connexion of the stamina among themselves. Those which have their filaments united at the base into one tube or cylinder, are combined into the 16th class, called Monadelphia, (or one brotherhood.) Those whose filaments are connected at the base into two separate parcels, and are found in the 17th class, called Diadelphia, (or two brotherhoods.)

The 18th class embraces all those plants whose anthers, and are rarely their filaments also, united into tube or cylinder. The flowers are called compound, as many of them are included in one common calyx. It is called Syngenesia. It is a very large class, and includes a great number of American plants, which variegate our fields and hedges in autumn.

The 19th class is called Gynandria, and those plants belong to it whose stamina are inserted upon the style or germen.

The 20th class is termed Monœcia, and consists of plants having their pistils and stamens in separate flowers, but which grow on the same individual plant.

Those which have only stamina are termed male, staminate, or barren flowers; those which have only

pistils are termed female, pistillate, or fertile flowers.

The 21st or last class of the flowers is termed Diœcia, and consists of staminate and pistillate flowers on different individual plants; so that some medium of communication is necessary before the pollen of the staminate can be can be carried to the pistillate flower in order to produce perfect fruit.

The 22d and last class is termed Cryptogamia, and embraces those plants whose flowers are so inconspicuous and uncommon that their mood of fructification is imperceptible without the aid of a microscope.

The mode of subdividing the classes was extremely simple. The principal means employed was the number of pistils which constituted what were called orders, though other means in some of the classes were resorted to. From the 1st to the 13th classes inclusive, the number of styles are the bases of the orders, and they are named accordingly from 1 to 6, *monogynia*, *digynia*, *trigynia*, *tetragynia*, *pentagynia*, *hexagynia*, and number upwards to *polygynia*.

The orders in the 14th class, *Didynamia*, are formed from the insertion of the seeds in the fruit. The first order is called *Gymnospermia*, or naked seeds, the seeds not being covered nor contained in any envelope. The 2d order is *Angiospermia*, or covered seed, being contained in a capsule.

The orders in the 15th class are 2, and formed from the shape of the fruit. The 1st is called *Siliculose*, the pod being short and roundish. The 2d order is *siliquose*, the pod being long.

The orders in the *Monodelphous* class are formed from the number of stamina from triandria to polyandria, and not from the pistils. The stamina serve also for the order of the next class, *diadelphous*, *pentadelphous*, *hexadelphous*, *octadelphous* and *decandriadelphous*.

The orders in *Syngenesous* plants are more complex. The 1st order is termed *Æqualis*—each floret of the compound flower is perfect of itself, being formed with stamina and pistils, and capable of perfecting its fruit. The 2d order, or *Superflua*, the florets of the centre or disk have both stamina and pistils, but the rays or marginal florets have pistils without stamina. The 3d order, *Frustranea*, with the central florets the same as the last, but the the marginal flowrets have neither pistils nor stamina. The 4th order, *Necessaria* central florets are staminate or have stamina only, while the marginal florets have pistils only. The 5th order, *segregata*, contains a number of florets, each having its own calyx, while one common calyx embraces the whole. The order of *Gynandriadelphous* is also formed from the number of stamina.

The 7 first orders of *Monœcia* are derived from the number of stamina—the 8th from the united stamina into 1 tube or Monodelphia—9th into several.

The orders of *Diœcia* are formed in a similar manner to the last, from the number and union of the stamina.

We have now come to the *Cryptogamia*, a very numerous and difficult class of plants. The 1st order is the *Ferns*, a singular sort of plants, not containing any thing like the flowers of the orders we have been considering. These grow on the back of the leaf, and resemble small dots or little heaps of dust bound down by a ring. The 2d order is the *Mosses*, a minute delicate race of plants, with distinct leaves and a hair-like stem, with a cap-like top which covers the system of fructification. The 3d order is the *Lichens*, which consist of those greenish and colored patches which cover rocks and trunks of trees, and contain little cup-shaped bodies, in which it is supposed the seeds reside. The 4th order or *Algæ*, contains the various kinds of sea-weeds and greenish tufts of hair which grow at the bottom of ditches. The 5th order embraces the immense family of *Fungi* which are alike remarkable for their singular and various forms, and for their wonderful diffusion over every part of space. They appear in the shape of mushrooms, toad-stools, and as mould on rotten fruit.

Of Vegetable Physiology.

Vegetable Physiology is that part of the science which treats of the situation and organization of vegetables, their composition and the various uses to which the peculiar parts of the plant are serviceable.

Nomenclature is employed merely in the external characteristics of plants; whereas Physiology is concerned in internal and constituent parts.

The external coat which covers all plants is called the *cuticle*, or *epidermis*, and in woody plants is converted into the outer back, or *cortex*. This last covers the inner bark, or *liber*. The next inner coat to this is called the *alburnum*, or soft wood. Next to this is the *lignum*, or wood; and immediately surrounded by this and in the centre of all, is the heart, or *medulla*, or pith. This last is only observable in the younger parts of wood: as it grows old it is not perceived. The *liber*, *alburnum* and *lignum* at different times of growth, are one and the same thing; but as the trunk enlarges these separate. Herbaceous plants have no wood nor alburnum.

The exterior coat of herbaceous plants is the epidermis, and encloses a fleshy and juicy substance called *cellular membrane*, and then the *parenchyma*.

One of the chief constituent parts of plants is Carbon—Hydrogen and Oxygen are also present. Potash, or vegetable alkali, is found in the generality of

plants, and Soda in such plants as usually reside near the sea-shore. Iron, Copper and Manganese have also been found in the ashes of some plants. Silica, or the base of Flint, is frequently met with in the epidermis of some grass, in the reed, in straw of wheat, rye, and that of the rattan, (*calamus rotang.*) Lime is also found in some plants. There are also many other principles in vegetables; such as sugar, mucilage, many vegetable acids, gluten, tannin, wax, resin, caoutchouc, camphor, tar, turpentine.

Sugar is obtained from the sugar cane, (*saccharum officinarum,*) a plant of the grass kind, which grows in the W. Indies. It is also procured from an American tree, which grows in all parts of our country, called sugar maple, *acer saccharinum.* Many other plants will produce it: the common Beet is used in great quantities in France for that purpose—also from *zea mays*, carrot, parsnip, &c.

Starch is obtained from wheat, by steeping the grain in cold water and then pressing out the milky juice, which is starch and water. Potatoes furnish it in abundance—the wild turnip, &c. *arum maculatum*, &c.

Tannin is a principle which is used for tanning leather, and is found in many plants, particularly in the bark of hemlock, oak, sumach, chesnut, &c.

Camphor is a volatile inflammable substance, generally had from the root of the *Laurus Camphora*, a tree growing in Japan; but many other plants produce it, although in very small quantities, such as, thime, sage, ginger, marjoram.

Opium is a narcotic principle found chiefly in the Poppy, *papaver album.* It is also to be obtained from the common salad and other lettuce, *lactuca.*

Turpentine is the juice of the Pine tree gathered by making incision in the trunk of the tree. The turpentine flows out in its pure state. Tar is obtained by burning the dead trunk and limbs of the pine tree in a pile or kiln with a slow fire. What is called *pitch* is obtained by evaporating the half of its bulk. What is called *rosin* is the substance that remains from turpentine after it has been distilled.

Vegetable Wax is produced in sufficient quantity to form an important article of commerce. The Bayberry tallow as it is called is the product of a secretion in the berries of the *Myrica cerifera.* It is much used for candles, and for covering the bottoms of vessels in place of tar.

Gluten can be obtained from the paste of wheat flour, by washing it in a small stream of water. The starch is thus washed out, leaving gluten, a tough, elastic, grey, and when dried, a brown and brittle substance. It is soluable in most of the acids and alkalis. It is an essential ingredient in wheat flour for its nutritive quality.

ART. 116.—*The Local Names of the Grape.*—[Extract of a letter to the Editors of the N. Y. Farmer and Horticultural Repository, dated

Linnæan Botanic Garden,
New York, July 28, 1828.

As it is an object of primary importance that persons who are making experiments on the Vine should know what particular grapes are referred to when local names are used, I have to state, that by examination during the present season, I have found that the native grape known around Richmond, (Va.) as the "Sloe," and the grapes received by me from Thos. McCall, Esq. of Georgia, under the title of "Black, or purple oval Muscadine," by which name it is there generally known, are both the same as the "Scuppernon," or "Roanoke Grape," of which it is well known to you there is a black and a white variety; and I have also received some which are said to be red, the foliage and the wood being exactly similar in all these varieties, and so strongly characteristic as to distinguish them with ease from all other species. I have now under culture quite a number of varieties of Missouri, Arkansaw, Louisiana and Texas grapes, of many of which the foliage is very peculiar, and in the number there are seven plants of the famous large Blue grape, which has attracted so much notice in the vicinity of St. Louis. Among our native vines, Vitis reparia and Scuppernon are, I think, invariably diœcious; and I think it probable Long's Grape may be added to the number. This last is of all our vines the most rapid in its growth, and the riparia next to it in that respect.

Yours most respectfully.

WM. PRINCE.

ART. 117.—*Agreeableness and Utility of the Study of Natural History.*—[From the (London) Magazine of Natural History.]

To know any thing does not consist in having merely seen it, or in recollecting its name; no naturalist can be said to know a plant, unless he knows its rank in the vegetable kingdom, its structure, habits of growth, the climates and countries in which it abounds, its history in its wild state, and, if a cultivated plant, its domestic history, its culture, properties, and uses.

The tulip and the ranunculus are known to every body, and are deservedly two of the most admired productions of professional florists. There is no child who cannot name them at sight, and no gardener who does not know a great deal about their culture: but how few, among either gardeners or botanical amateurs, know that these two plants, however nearly allied as fine flowers, are very different in point of rank in the scale of vegetable creation; that they be-

long to separate fundamental divisions of plants, the organization of the one being much more perfect than that of the other; and that they display wholly different characters of structure and physiological economy, from the seminal embryo through every stage to the perfect plant! Thus the ranunculus, belonging to a division of plants characterised by a reticulated structure of all their parts, admits of portions of its leaves being broken off, without impeding the remainder of the leaf in the performance of its functions; while the tulip, belonging to a division characterised by a parallel fibrous structure of all the parts, does not admit of part of the leaves, and particularly of their extremities, being cut off, without impeding their functions, and conseqently injuring the present health of the plant; and influencing its vigour for the following year. But any one who is so far a vegetable anatomist and physiologist as to know the distinctive structures of these two divisions (Monocotyledonæ, Dicotyledoneæ), if he should see only a part of the leaf of a tulip or of a ranunculus, would be able to ascertain the division to which it belonged, and, by consequence, the essential principles of the culture and management of the plant, as far as respects the most important organs of plants, leaves being analogous to the lungs of animals.

Such is the difference between knowing a plant as a gardener or an amateur, and knowing it as a physiologist. There must evidently be a superior degree of pleasure in combining both descriptions of knowledge, and as evidently an advantage in point of utility: for the mere cultivator might be aware of the effect of cutting or mutilating the leaves of the tulip and ranunculus from experience in the management of these two plants, yet not knowing it from principle, the knowledge could only be of use to him in this particular case, instead of being of use as applied to two of the three grand divisions of the vegetable kingdom.

There is a positive source of pleasure in knowing the plants individually. Every plant of which we acquire a knowledge by sight, so as to be able to recognise it again when it comes in our way, is not only a distinct source of pleasure at first, but the pleasure is repeated and increased when we see it for the second and third times, or after some time, or in any other circumstances relatively to ourselves or to the plant.

In this way, with no other knowledge of plants than that of being able to name them when we see them, and consequently, to communicate our ideas respecting them to others, they may prove sources of the most interesting associations. But even this pleasure, derived from what may be termed the trivial knowledge of plants, may be greatly enhanced by extending our views to circumstances connected with them not strictly botanical. Thus we may view them with regard to their geological relation in any particular country, their geographical distribution relatively to the world, their migration from one country to another, their relation to climate, their being domestic plants following man, their being social (growing in masses) or solitary, their being abundant or rare, their natural modes of propagation, their natural enemies or friends whether among other plants or among animals, their history with regard to man, and their properties, uses, and culture.

A mere general lover of plants, therefore, who knows no more of them, in a strictly botanical sense, than their names, may add greatly to the pleasure he derives from this taste, by simply acquiring something of that knowledge which may be called the biography of plants. It must be evident that cultivators by adding to their stock of this description of knowledge, would not merely add greatly to their enjoyments, but would also contribute to their professional improvement, would add to their power as well as to their pleasure.

Those of us who know nothing of scientific zoology, still derive much pleasure from observing the great variety of forms, habits, and powers of the animal kingdom; and nothing is more common than for man to form attachments to particular animals. We transfer the human virtues to some of the nobler quadrupeds, and admire the courage of the horse, the sagacity of the dog, the docility of the ox, the patience of the ass, and the observant mimic powers of the monkey tribe; we are delighted with the singing of birds, instructed by the industry of the bee or ant, pleased with the gaiety of the butterfly, and amused or annoyed by various other insects or reptiles. But what is this interest in animated nature compared with the enjoyments of a scientific zoologist? The man who can trace the powers of the Author of Nature, exerted in various degrees and for various purposes, through all the different orders of animated nature, from the most minute insect or mollusca, endowed with unerring instinct, up to the intellectual powers of rational man, and who knows scientifically that man is the most perfectly formed of all animals, lives in a different world from the mere general observer, and enjoys that more exalted pleasure which can be given by scientific knowledge only.

Nor need the young student, who aspires to become a zoologist, be discouraged from attempting to obtain his share of the superior delight scientific knowledge can afford, by the obstacles that apparently oppose the acquirement. Every step in the pursuit produces a reward and a gratification, in exact proportion to its difficulty; and every advantage thus gained becomes a fresh inducement to proceed. The geographical distribution of the various animated beings which surround him, invests each untried locality with new charms, and presents to him on all

sides, fresh objects to repay his researches. Their forms, habits, powers, and structure are all so many indices to the great work he is every day invited to peruse.

To point out the learner the most proper objects of attention, or the best mode of arriving at a competent knowledge of their various peculiarities, does not come within the limits of the present article; yet the the gradations observed in the great field of animated nature indicate the preliminary steps for the commencement of his operations.

The occasional and sometimes alternate developement of internal and external organization, each division advancing in the degree of its perfection as the animal rises higher in the scale, seems to indicate the natural order progress. The slow and creeping caterpillar sinks into a state of lethargy, ultimately to burst forth with organs and powers of locomotion the most opposed to its former condition.

Fishes, reptiles, and birds furnish additional examples of an adaptation of parts, admirably suited to the exigencies of the animals, yet possessing and affording capabilities of the most opposite character; and the rudiments of extremities furnished to the cetacea, become ultimately perfected in animals of the same class, for the individual but opposite powers of climbing, burrowing, flying, prehension and speed.

Thus agreeably led on, the zoologist is brought by degrees to the contemplation of man, the image of the Creator of all; and finds that, although man does not in himself possess all the different qualities of the organs of each individual beneath him, yet he presents, in the varied and extensive combination of his powers, that balance of perfection, which, independently of mental endowment, stamps him the head of his own as well as of every other class.

The study of mineral bodies is of the greatest importance: for what would civilized man be without iron? The different ores, and the various useful or precious stones, display great variety in structure, colour, and other properties. Many species are highly beautiful, others are prized for their rarity, and all are interesting with reference to crystalography, systematic arrangement, and the useful arts. The study of mineralogy is intimately connected with that of geology; and the utility of both, in the discovery and working of quarries and mines, is sufficiently evinced by the stones and metals which enter into the construction of our houses, roads, machines, and implements.

An acquaintance with the leading facts of geology adds greatly to the interest of the traveller in passing through any country. Whether mountain or plain, hill or valley, solid rock or detached stone, gravel, sand, or alluvial soil presents itself, the mind of the geologist is carried back to former revolutions; in short, to him every part of the earth's surface may be said to speak of its history. How much greater then, must be the pleasure of the geologist than that of the common observer! The ploughman, who views in the field of gravel which he turns up the bed of a former ocean, and in that gravel the remains of rocks or mountains of a more remote period, is he not gratified with the mere idea? How many interesting associations are connected with the fossil remains which the laborer turns up in digging drains or ditches, or crushes to pieces in the humble occupation of breaking stones for mending roads! Geology not only discovers to us the awful revolutions which have in former ages changed the surface of the globe, but it unfolds to our view the forms of strange and unknown animals buried in the different strata, presents us with the zoology and botany of the former world, and even enables us to contemplate the nature of the future revolutions which the globe we inhabit is destined to undergo.

Some knowledge of meteorology, as it regards the weather, is common to all men without exception; but even to this every-day subject, science has lent additional interest. It is one thing to look at the clouds with a common eye, and another thing to observe them with the eye of a Foster or a Howard. The countryman and the sailor know to expect in March and September the equinoctial gales, but the meteorologist knows the reason of their occurrence at these seasons. When we consider what has been done, or is now doing, by lightning rods, hail protectors, marine barometers, &c., the utility of this science is much greater than at first might appear.

The common phenomena of thunder, lightning, meteors, hail, rain, snow, frost, dew, fog, and vapour, by our taking a little pains to increase our information respecting them, are all capable of affording increased degrees of interest and pleasure. And let the learner never forget, that in the pursuit of pleasure, as in every other pursuit, the amount of gratification will always be in proportion to the labour employed.

Notwithstanding the very limited knowledge which exists among country people of the objects of natural history, as a science, it is certain that this must have been one of the earliest subjects of human attention, from the necessary dependance of man on certain plants and animals for food, and from the influence which the weather and climate must have had on his dress and the construction of his dwellings. In different countries and climates, different animals and plants would attract his attention; but in all countries the first objects of human solicitude must have been animals, plants, the soil, and the weather. The study of natural history, therefore, is the most primi-

tive and congenial of studies. Gardening and Agriculture are the primary occupations in new countries, and as the first step in the civilization of savages is to supply them with useful plants, animals, and implements of culture, so the study of natural history, the observation of the habits and peculiarties of plants and animals, is the fittest to commence with, and the best calculated for improving uninformed minds.

The study of natural history we consider to be in an especial manner calculated for raising the character of the labouring classes of the community. It may be said to be a study which they have, to a certain extent, already engaged in; it requires less preliminary information than any other study, and can by no means be considered dry or severe, since it requires habits of observation chiefly, and every step is likely to be attended by some acquirement intimately connected with, and beneficial in, the pursuits of a country life. The humblest and most laborious individual, after fulfilling all his duties to his employer and his family, has still a portion of leisure: and with him as with man in every class of society, happiness will be found to depend much more on the manner in which this leisure time is spent, than on the nature of his professional or mechanical occupation. But not only does the happiness of the laborious classes depend on the manner in which they spend their leisure time but also their chance of raising themselves to a higher condition in society. The pursuits of natural history, besides their suitableness to the former object, are, it is obvious, particularly adapted for advancing the interests of gardeners and agricultural laborers.

The study of natural history is well calculated to have a beneficial influence on the moral sentiments and conduct. While various other descriptions of knowledge are cultivated to improve the reasoning powers of the mind, their influence on the heart and affections is comparatively remote. Natural history has a different effect, and may be said to improve and humanise the whole man. It is perfectly natural to man to regard with affection the living things around him; and every one must feel that the better these are known, the more they will be loved. If man born and educated in cities has less interest or affection for animals and plants, than man born and educated in the country, it can only be because in the latter state he is more familiar with them, and knows more of them. The connection between moral conduct and the love of animals and plants, may be thought intimate or remote by different individuals; but the more we trace design and purpose in the works of nature, shall we not sympathise the more with the fitness of means to ends in human conduct? The more we enter into the details of nature, shall we not increase our taste for facts? which is, in other words, the love of truth, he foundation of justice and honesty. It is unnecessary to trace the influence of the study of natural history from individuals to nations, and its tendency to universal intercourse, civilisation, and peace. For these reasons, amongst many others, the study of natural history is particularly adapted for the earliest education of young people; and this idea is confirmed by the rapid progress that children make in this study whenever it has been considered a fiting acquirement. Infants, who have made but little progress in languages or sciences of reasoning and reflection, have yet made considerable progress in the observation and recollection of natural objects.

Natural history is the parent of natural religion. To know and to acknowledge the Author of nature, are precepts inculcated by the religion and morality of every civilised people; and the history of the world shows that most nations have had some way of what they considered knowing God, and some particular reasons which they assigned for loving and reverencing him. Without interfering with that knowledge of God which is obtained by revelation, or with those reasons for loving him that are deduced from the doctrines of particular religions, natural history arrives at a knowledge of the Author of nature, by enquiring into the skill and contrivance manifested in his works, calls forth our affections towards him in loving those of his works which contribute to our happiness, and us to adore him in the contemplation of the superhuman power & wisdom displayed in the general system and particular contrivances of the world and its various details. "He," observes Linnæus, "who does not make himself acquainted with God from the consideration of nature, will scarcely acquire knowledge of him from any other source; for if we have no faith in the things which are seen, how should we believe those things which are not seen?"

For this reason, the knowledge of the Author of nature, through his works, may be called the universal religion, as the love of fitness, induced by love for facts, may be called the universal morality. Neither interferes with the religion or morality of any particular country, climate or people.

An extended knowledge of natural history will not take place without producing corresponding improvements in taste, literature, and the elegant arts. A knowledge, in readers and spectators, of natural forms and appearances, will demand a greater accuracy in the delineation of them by the artist and the man of letters. The public taste in painting, sculpture, and architecture is gradually improving; and no inconsiderable part of these improvements will be found to consist in the more correct representation of natural objects. The same improvement of taste has extended to our different manufactures, and especially to the figures print d on cotton,, paper, and earthen ware, the superiority in these and other arti-

cles of British manufacture, is acknowledged to consist, in a great degree, in a more correct imitation of plants, animals, and general scenery.

ART. 116.—*Heat and Light.*—[Extracted from Loudon's Encyclopedia of Gardening.]

The heat of the sun is the cause of growth, and its light the cause of maturity, in the vegetable kingdom. This is universally acknowledged: animals will live without or with very little light; but no plants whatever can exist for any time without the presence of this element. The agency of electricity in plants is less known.

Two opinions are current respecting the nature of heat. By some philosophers it is conceived to be a peculiar subtle fluid, of which the particles repel each other but have a strong attraction for the particles of other matters. By others it is considered as a motion or vibration of the particles of matter, which is supposed to differ in velocity in different cases, and thus to produce the different degrees of temperature.

Whatever decision be ultimately made respecting these opinions, it is certain that there is matter moving in the space between us and the heavenly bodies capable of communicating heat; the motions of which are rectilineal: thus the solar rays produce heat in acting upon the surface of the earth. The beautiful experiments of Dr. Herchel have shown that there are rays transmitted from the sun which do not illuminate and which yet produce more heat than the visible rays; and Ritter and Dr Wollaston have shown that there are other invisible rays distinguished by their chemical effects.

Heat is radiated by the sun to the earth, and if suffered to accumulate, Dr. Wells observes, would quickly destroy the present constitution of our globe.

This evil is prevented by the radiation of heat from the earth to the heavens, during the night, when it receives from them little or no heat in return.

But, through the wise economy of means, which is witnessed in all the operations of nature, the prevention of this evil is made the source of great positive good. For the surface of the earth, having become colder than the neighbouring air, condenses a part of the watery vapour of the atmosphere into dew, the utility of which is too manifest to require elucidation. This fluid appears chiefly where it is most wanted, on herbage and low plants, avoiding, in great measure rocks, bare earth, and considerable masses of water. Its production, too, tends to prevent the injury that might arise from its own cause; since the precipitation of water, upon the tender parts of plants, must lessen the cold in them, which occasions it. The preventsion, either wholly or in part, of cold, from radiation, in substances on the ground, by the interposition of any solid body between them and the sky, arises in the following manner: the lower body radiates its heat upwards, as if no other intervened between it and the sky; but the loss, which it hence suffers, is more or less compensated by what is radiated to it from the body above, the under surface of which posses always the same, or very nearly the same temperature as the air. The manner in which clouds prevent, or occasion to be small, the appearance of a cold at night, upon the surface of the earth, is by radiating heat to the earth, in return for that which they intercept in its progress from the earth towards the heavens. For although, upon the sky becoming suddenly cloudy during a calm night, a naked thermometer, suspended in the air, commonly rises two or three degrees: little of this rise is to be attributed to the heat evolved by the condensation of watery vapour in the atmosphere, for the heat so extricated must soon be dissipated: whereas the effect of greatly lessening, or preventing altogether, the appearance of a superior cold on the earth to that of the air, will be produced by a cloudy sky, during the whole of a long night.

Dense clouds, near the earth, reflect back the heat they receive from it by radiation. But similarly dense clouds, if very high, thongh they equally intercept the communication of the earth with the sky, yet being, from their elevated situation, colder than the earth, will radiate to it less than they receive from it, and may, consequently, admit of bodies on its surface becoming several degrees colder than the air. Islands and parts of continents close to the sea, being, by their situation, subject to a cloudy sky, will from the smaller quantity of heat lost by them through radiation to the heavens, at night, in addition to the reasons commonly given, be less cold in winter, than countries considerably distant from any ocean.

Fogs, like clouds, will arrest heat, which is radiated upwards by the earth, and if they were dense, and of considerable perpendicular extent, may remit to it as much as they receive. Fogs do not, in any instance, furnish a real exception to the general rule that whatever exists in the atmosphere, capable of stopping or impeading the passage of radiant heat, will prevent or lessen the appearance at night of a cold on the surface of the earth greater than that of the neighboring air. The water deposited upon the earth during a fog at night, may sometimes be derived from two different sources, one of which is a precipitation of moisture from a considerable part of the atmosphere, in consequence of its general cold; the other a real formation of dew, from the condensation, by means of the superficial cold of the ground, of the

moisture of that portion of the air, which comes in contact with it.

When bodies become cold by radiation the degree of effect observed must depend, not only on their radiating power, but in part also on the greater or less ease with which they can derive heat, by conduction, from warmer substances in contact with them.

The hurtful effects of cold occur chiefly in hollow places, and in clear and still nights, frosts are less severe upon hills than in neighboring plains: the reasons of the former are, that the air being stiller, the cold, from radiation, in the bodies which it contains will be less diminished by the renewed application of warmer air, and that from the longer continuence of the same air in contact with the ground, less dew will be deposited, and therefore less heat extricated during its formation; the reason of the latter, in contradiction to the commonly received opinion, is that in very clear and still nights, the air near the earth is colder than that which is more distant, to the height at least of 220 feet, this being the greatest to which experiments relate. If then a hill be supposed to rise from a plain to the height of 220 feet, having upon its summit a small flat surface covered with grass; and if the atmosphere, during a calm and serene night, be admitted to be 10 degrees warmer than it is near the surface of the low grounds, which is a less difference than what sometimes occurs in such circumstances, it is manifest, should both the grass upon the hill, and that upon the plain, acquire a cold of 10° by radiation, the former will notwithstanding, be 10 degrees warmer than the latter. Hence also the tops of trees are sometimes found dry when the grass on the ground's surface has been found covered with dew.

I had often, observes Dr. Wells, in the pride of half knowledge, smiled at the means frequently employed by gardeners, to protect tender plants from cold, as it appeared to me impossible, that a thin mat, or any such flimsy substance, could prevent them from attaining the temperature of the atmosphere, by which alone I thought them liable to be injured. But, when I had learned, that bodies on the surface of the earth become, during a still and serene night, colder than the atmosphere, by radiating their heat to the heavens, I perceived immediately a just reason for the practice, which I had before deemed useless. Being desirous, however, of acquiring some precise information on this subject, I fixed, perpendicularly, in the earth of a grass plot, four small sticks, and over their upper extremities, which were six inches above the grass, and formed the corners of a square, the sides of which were two feet long, drew tightly a very thin cambric handkerchief. In this disposition of things, therefore, nothing existed to prevent the free passage of air from the exposed grass, to that which was sheltered, except the four small sticks, and there was no substance to radiate heat downwards to the latter grass, except the cambric handkerchief. The temperature of the grass, which was thus shielded from the sky, was, upon many nights after examined by me, and was always found higher than that of neighboring grass which was uncovered, if this was colder than the air. When the difference in temperature, between the air several feet above the ground and the unsheltered grass, did not exceed 5 degrees, the sheltered grass was about as warm as the air. If that difference, however, exceeded 5 degrees, the air was found to be somewhat warmer than the sheltered grass. Thus, upon one night, when fully exposed grass was 11 degrees colder than the air, the latter was 3 degrees warmer than the sheltered grass; and the same difference existed on another night, when the air was 14 degrees warmer than the exposed grass. One reason for this difference, no doubt, was that the air, which passed from the exposed grass, by which it had been very much cooled, to that under the handkerchief, had deprived the latter of part of its heat; another, that the handkerchief, from being made colder than the atmosphere by the radiation of its upper surface to the heavens, would remit somewhat less heat to the grass beneath, than what is recovered from that substance. But still as the sheltered grass, notwithstanding these drawbacks, was upon one night, as may be collected from the preceding relation, 8 degrees, and upon another 11 degrees, warmer than grass fully exposed to the sky, a sufficient reason was now obtained for the utility of a very slight shelter of plants, in averting or lessening injury from cold, on a still an serene night.

ART. 117.—*Hedges.*—[From the Am. Farmer.]

In the 15th number of the current volume of the American Farmer, "A correspondent wishes to know which is the best kind of thorns for hedges, &c." I have had some experience in that branch of improvement, and am willing to communicate it. I have planted three different kinds, namely: the Virginia thorn, raised in abundance, and sold by Mr. Joshua Pierce, at his nursery, Linnæan Hill, near Washington, from 4 to $5 per thousand, according to the quantity purchased; the English white thorn, which I imported from Liverpool, cost with charges from five to six dolls. per thousand, and a native thorn found in my own neighborhood, and which I have seen in abundance in several places in this state and in Pennsylvania; I know not the botanical name, but in a natural state it grows large, of a circular formed top, with a dark green oval leaf, something resembling that of a pear tree, the thorns very long and sharp, the berries large and red. I have been told it is the same as the New Castle thorn; for the mode of raising the plants, see Mr. Mahon's Gardening. The

first mentioned, I think, make the handsomest hedge; I would prefer it for a garden or lawn: the second sends a great many lateral branches, and makes a close compact fence; the third is of a most exuberant growth, and shoots out in all directions; perhaps the objection will be the expense of keeping it in proper bounds; I have had shoots of one year's growth upwards of six feet long. I am of opinion that with proper management, a sufficient fence can be made with any of the three kinds in four or five years. I have also a hedge of the wild crab apple, that I think will answer the purpose, and am now preparing to plant the honey locust, that I think may excel them all, but as yet cannot positively decide. My mode of planting is, after manuring the ground well, and planting potatoes on it, (which enriches and cleans it from weeds) I stretch two lines in the intended direction at a foot apart, and mark it off with a spade as deep as possible: then dig it out as deep as the good soil goes; this I lay on the one side of the trench, and shovel out the sub-soil on the other side to the depth of 9 or 10 inches; this being done, let a careful hand go into the trench, and place the plants each side of it at the distance of eight or nine inches, forming a double row, 12 inches apart, and 8 or 9 distant in the rows—*****—having a smart boy to shovel in first the good earth, and then what came from below; care must be taken to fix the plants at the proper distance and tramp the earth firmly about the roots. Before planting, I cut off all the straggling roots, and afterwards I cut the tops within an inch of the surface; after the first year, I again cut all off about three inches from the ground; after the second, about twelve inches, and so on every year, letting them rise gradually, according to their vigor, till they come to a proper height; by these means I thicken my hedge at the bottom, otherwise it would be no fence, especially against the swinish multitude, that are always on the look-out and ready for mischief. As to planting, I think it immaterial, whether it is done in fall, winter, or spring, if the ground be in good order; but if you have much to do, and defer it to the spring, there is a chance of the buds putting out before planting, which I would avoid if possible.

Probable Cost.—I estimate that the potato crop will pay for manuring and preparing the ground.

I suppose a good spadesman, assisted by a boy, will plant twenty perches in a day—wages and victuals I value at $1.

Suppose you plant at 8 inches distance in the row, it will require 50 plants at $4 per thousand, the cost per perch will be as follows, viz.:

50 plants at $4 per thousand,	20 cts.
Expense of labor,	5
	cts. 25 per perch.

Protection from cattle or sheep, and careful weeding, will be necessary for three or four years. They should not be planted nearer any protecting fence than three feet, nor where the shade of trees will reach them, nor should they be allowed to rise higher than five feet at any time; for if they are allowed to shoot up, they will get thin at the bottom.

I am so well convinced of the efficacy and necessity of this species of improvement, that I am astonished at its being so little attended to, and I am still more astonished, that I never saw by any agricultural society, the least notice taken or encouragement given to it. Yours respectfully.

C. BIRNIE.

Thorndale, Taneytown, 14th July, 1828.

ART. 118.—*Extract from the introductory remarks to Landscape Gardening in a work now preparing for the press, entitled "The New York Horticulturist, by* WM. WILSON, *author of 'The Economy of the Kitchen Garden &c.'—member of the N. Y. Horticultural Society, C. M. of the Hor. Society of London, and of the Calidonian Horticultural Society of Edinburgh, &c."*

From the melancholy accounts that are occasionally published in various periodicals, of the unsparing hand of the devouring woodman, strangers might be led to conclude, that in our old settlements the face of our country was completely denuded of all those cheering productions that, of all others, constitute the most beautiful and delightful ornaments of the abodes of man. Far be it from the writer of this to encourage the unlimited blow of the woodsman's steel; but let justice be done to the prudence and judgement of our yeomanry. Connecticut is certainly one of the most thickly settled as well as oldest states in the Union, yet what portion of the most refined countries of Europe can exhibit a more cheerful, abundant, and delightful aspect of rural scenery, in all its varied beauties, than this long settled section of our happy land? I am persuaded there is not one solitary instance to be found in all this state of a single farm to be met with destitute of the blooming orchard; and blessed in many, and those too, in the judicious portions thereof, with the cooling shade of the most stately productions of the verdant forest. Nor is there much danger of the beauty of the country ever being destroyed, by the cutting down of these domestic ornaments, for they are left on sites that are more prefered for the production of trees than any thing else; and the wise inhabitants will certainly still continue, like their provident forefathers, to retain such spots for the continual reproduction of that, which at once, constitutes so much of the pride and profit of their estates; Nor is the beauty of this coun-

try altogether owing to the judicious arrangements of her local circumstances; In many instances her streets and roads are lined with stately forest trees; the additional beauty which might be added to the appearance of these United States in all directions by lining our vast turnpikes and other roads with trees, is wonderful; and the exertions to be observed in many places of enterprising men, in contributing to to the beauty and comfort of their country in this way, is extremely gratifying. Perhaps no regulation of any men, acting in public capacities, could interfere as such, in facilitating that most desirable object of public improvement; but the influence and example of all such as apply, at least, a portion of their considerations for the promotion of such objects, will certainly entitle them to the warmest gratitude their country can bestow: Nor are there any grounds to doubt of the successfully growing progress of American Rural Improvements; the natural taste of her citizens generally, are more bent to the contemplation of such kind of excellancies, than those arising from the honours acquired by the achievements of war; and the dawn has now broken over our country that exhibits a most extensive taste for the encouragement of internal improvement. And worthy men are found in various sections of our country, who are sufficiently supported by an enlightened patronage, to devote their time and talents in disseminating useful information on the various branches of rural sciences and pursuits, in weekly and monthly publications, the benefits arising form which, have been already extensively experienced and the worth of the fruits of whose future labours, may be truly considered, as altogether incalculable. Here the experienced farmer or craftsman beholds an emblazoned national tablet of honour on which he can have inscribed the results of the toils of his ingenuity. The Editors are always glad to receive the simple honest narative of the man of experience; and I am persuaded, there are but very few, rustic hoary headed sages in America, who could not rehearse some interesting tale connected with the former execution of their active labours, and from which many who now live in this more advanced age of improvements, might still derive both useful and entertaining information: But to the youth of our country the value of such publications as the "New England Farmer," the "American Farmer," and the "New York Horticultural Repository," &c. are above all price. Youth is the time when the mind is susceptible of impression, and if those works for which youth is naturally fond, are properly digested, the effects on their future taste and habits, are well known to be great. Few children who are brought up in the country are destitute of an ambition to see their own places excel in rural beauties: Witness the fairy gardens, the tender fingers of the children of almost every family are so ready to form in their infant years: And where is the father that would not rejoice to be able to put into the hands of his rising youth, such useful and interesting publications: by the perusal of these they will constantly be kept in mind of the great, and many natural, superior advantages with which the land of their nativity is blessed: They will see continual accounts of the various means employed by enterprising men, both throughout this and other countries, in promoting improvemets in all the various branches of agriculture and horticulture, as well as many connected with the mechanical arts &c. The minds of youth, properly educated, as are Americans generally, are warm, elevated, and fond of action; but they need information and direction from those of riper years. And it becomes such, while they continue to show the great and many advantages of our country, to point out a few of those innumerable and still dormant avenues, which all lead through their multitude of channels to inexhaustable treasures: For the most comprehensive knowledge and understanding of all the natural advantages peculiar to our soil and climate, ought only to be considered as so many sure bases upon which we are to ground the commencement of all our improvements. These, to the mind of the experienced scientific agriculturist or horticulturist, present such a series of interesting contemplations that it seems difficult to determine where to begin or to be able to calculate through what mazes of natures beauties he would travel, before he could stop, but for a moment, on the delightful journey.

In order to assist the ambitious patriot in advancing the rural improvements of his country, we must begin at his native dwelling, and take a survey of the site and state of his kitchen garden and orchards, as well as the general arrangement of all the various fields throughout his estate; in doing which, we are not to be guided by the limited, although more refined, rules of European landscape gardening. Our remarks will be in accordance with the idea of our maintaining and improving one natural, grand, noble, and national characterestic of American rural excellencies, where the lover of rural scenery, instead of being under the necessity of entering, as in Europe, through the guarded gates of the great and opulent in order to obtain the gratification of such a view, will only have to enter the precincts of any of the public roads through which he can pass in any, or in all directions, through our vast country, every where ornamented with the majestic and varied beauties of the hand of nature. And that such a natural and noble national characterestic will not soon be destroyed, the cheering aspects of our oldest settlements afford the strongest proof.

The finely and highly ornamented premises that

surround the palaces of many of the European Noblemen, we have no right nor inclination to undervalue or despise. The pride of America is the actual existence and exhibition of one great and uniform national characterestic displaying itself in all directions—possessed of all the principle beauties and excellences of the vegetable world, to point out the means of preserving and improving which, will constitute the principal subject of the following pages.

ART. 119.—Biography.—*Death of Sir J. E. Smith, President of the Linnean Society.*—From the (London) Magazine of Natural History.

On Monday, March 17, at his house in Norwich, aged 68, died the distinguished naturalist, Sir James Edward Smith, M.D. F.R.S., Member of the Academies of Stockholm, Upsal, Turin, Lisbon, Philadelphia, New York, &c. &c.; the Imperial Acad. Naturæ Curios., and the Royal Academy of Sciences at Paris; Honorary Member of the Horticultural Society of London, and forty years President of the Linnean Society.

Born at Norwich, Dec. 2, 1759, where he received his education; went to Edinburgh in 1780, having previously devoted himself to the study of natural history, and botany in particular. During his medical studies at that university, he so far distinguished himself as a botanist, as to obtain the gold medal given to the best proficient among the students in that science.

Upon leaving Edinburgh, and going to London to perfect his professional studies, he became acquainted with Sir Joseph Banks, that eminent patron of natural science and of all its ardent admirers; upon whose recommendation he purchased in 1784, "the celebrated Linnean Collection," comprising the epistolary correspondence of the great Linneus and his son, together with every thing that belonged to those eminent men, relating to natural history or medicine.

From that period, the life of Mr. Smith was devoted to a zealous cultivation of the science of natural history; and his numerous works will constitute a perpetual monument of that fame which no living author more duly merited or more justly obtained.

Having purchased the Linnean Collection, and settled in London as an acknowledged man of science, in the year 1786 he graduated as a Physician at Leyden. In that and the following year he visited most of the classical and celebrated places of France and Italy. The account of these travels was published in 1793, under the title of "A Sketch of a Tour on the Continent," in 3 vols. 8vo.; a work which at once raised the subject of our memoir into the first class of literary society.

Upon his return to London, Dr. Smith (in conjunction with his lately deceased and highly valued friend, Dr. Goodenough, Lord Bishop of Carlisle, who was one of the original vice-presidents, and Thomas Marsham, Esq. who became Treasurer) set about establishing the Linnean Society, of which Dr. Smith was the original president, and to which distinguished office he was annually and unanimously chosen from that period to the present time.

The first meeting was held April 8, 1788, when "an introductory discourse on the rise and progress of natural history," was read by the president. This forms the first article of the "Transactions of the Linnean Society;" a work which has already extended to fourteen or fifteen quarto volumes.

In 1792 Dr. Smith was invited to give some instruction in his favorite science of botany to the Queen and Princesses, at their rural and elegant retreat Frogmore, near Windsor; and how well he was calculated for such an appointment, those who have derived delight and improvement from his lectures at the Royal Institution, at Liverpool, at Bristol, &c. can amply attest.

In 1796 Dr. Smith was married to the only daughter of the late Robert Reeve, Esq., of Lowestoft, Suffolk.

In the following year he retired from London to reside in his native city; and, with occasional visits to the metropolis, where he had a very numerous circle of scientific friends, as well as an extensive acquaintance in the highest ranks of society, to whom he was warmly attached, and by whom he was reciprocally esteemed, Norwich became his constant residence.

In 1814 Dr. Smith received the honor of knighthood at the hands of his present Majesty, who was then Prince Regent, and who had graciously condescended to become Patron of the Linnean Society.

The Horticultural Society was pleased to enrol the name of Sir James Edward Smith as one of its honorary members, in conjunction with those of his late Royal Highness the Duke of York and Albany, his Royal Highness the Prince of Saxe Coburg, and Sir Humphrey Davy, L.L.D. &c. late president of the Royal Society.

The health of Sir James Edward Smith had been for some time declining; but following the even tenor of his scientific pursuits, and blessed with every comfort that a congenial union can afford, his time glided on without the slighest relaxation of ardour in his botanical labors, while his latest and even his unfinished works, attest that there was no diminution either of his zeal or his success, in affording both information and satisfaction to those who were proud to look up to him as one of the first botanists of the age.

In 1824, on occasion of the establishment of a museum of natural history in Norwich, through the exertions of a few admirers of the science, Sir James Edward Smith kindly lent the weight of his name in furthering this object, and condescended to become president of that institution.

Among the numerous works of which Sir James Edward Smith was the author, it may be sufficient here to mention one or two, perhaps, besides his Tour, as those upon which his fame was in a great measure reared, and upon which it may be said to be permanently established.

Of these "English Botany" is entitled to the first consideration, as containing a description and a colored figure of every plant known to be indigenous. This work consists of thirty-six octavo volumes, and contains 2592 figures of British plants.

It is a curious but melancholy coincidence, that on the very day he entered his library for the last time, the packet containing the fourth volume of his "English Flora" reached him; and he had the gratification of witnessing the completion of a work, upon which his friends have frequently heard him express an opinion that it was one which would eventually redound most to the estimation of his knowledge as a botanist and his credit as an author.

A pretty correct estimate of Sir James Edward Smith's benevolent views of the power and wisdom of the God of Nature, (and he had a most perfect and consolatory conviction of the truth of Divine Revelation,) may be given with great propriety in his own words, at the conclusion of the preface to the work last mentioned:—"He who feeds the sparrows, and clothes the golden lilly of the fields in a splendor beyond that of Solomon himself, invites us, his rational creatures, to confide in his promises of eternal life.—The simple blade of grass, and the grain of corn, to which he gives its own body, are sufficient to convince us that our trust cannot be in vain. Let those who hope to inherit these promises, and those who love science for its own sake, cherish the same benevolent dispositions. Envy and rivalship, in one case, are no less censurable than bigotry and uncharitableness in the other. The former are as incompatible with the love of nature as the latter are with the love of God, and they altogether unfit us for the enjoyment of happiness here or hereafter."—T.

ART. 120.—*Outlines of Horticultural Chemistry.—Manures.* By G. W. Johnston, Esq., of Great Totham, Essex. From the Gardener's Magazine. (Continued from No. 5, p. 110.)

Some manures ameliorate a soil by absorbing moisture from the atmosphere. This property is at least as beneficial to ground that is aluminous as to that which is siliceous; for it is equally useless to either during such periods of the year as are characterized by a plentiful deposition of rain, but in the droughts of summer, when moisture is much wanting to plants, it is beneficial to both: in very dry seasons it is even of greater importance to clayey soils than to light ones; for vegetation on the former suffers more from long-continued drought than on the latter, inasmuch as that moisture being equally exhaled from each, the surface of the clayey soil becomes caked and impervious to the air, which is the only grand source of compensatory moisture that is available to the languishing plants, and which is more open to those which grow on light, and consequently more pervious soils.

The following table of the comparative absorbent powers of many manures, &c. is chiefly extracted from "An Essay on the uses of salt in Agriculture, &c.," by my brother, Mr. C. Johnston:—

1000 parts		Parts
	Horse dung, evaporated previously to dryness, at a temperature of 100 deg., absorbed during an exposure of three hours to air saturated with moisture at 62 deg.	145
	Putrefied tanner's bark, under similar circumstances, 66 deg.	145
	Unputrefied do.	115
	Cow dung	130
	Pig do.	120
	Sheep do.	81
	Pigeon do.	50
	Refuse marine salt, 60 deg.	49 1-2
	Soot 68 deg.	36
	Burnt clay	29
	The richest soil (in one hour)	23
	Coal-ashes	14
	Lime (part carbonate)	11
	Crushed rock salt	10
	Gypsum	9
	Chalk	4

The absorbing power of a manure is much influenced by the state in which it is presented to the atmosphere. In a finely divided state, mere capillary attraction ansists it; hence, as we have before insisted, the importance of keeping the soil frequently stirred, by hoeing, &c. The most ancient Roman agriculturists were aware of this. "What is good tillage?" says Cato, in his De Re Rustica. "To plough. What is the second thing? To plough. The third is to manure." But a mere mass of cotton, by means of capillary attraction, will absorb moisture from the air, yet it parts with it at a very slight elevation of temperature; it is of importance, therefore, to ascertain which are the manures that not only absorb but retain moisture powerfully. The following results of my experiments throw some light on on this point:—

		Minutes
10 parts	Pig dung, evaporated to dryness, at a temperature of 106 deg., and then moistened with 6 parts of water, required for being reduced to dryness again, at the above temperature	135
	Horse dung under similar circumstances	90
	Common salt	75
	Soot	65
	Rich Soil	32
	Chalk	29
	Poor soil (siliceous)	23
	Gypsum	18

These experiments point out a criterion by which we easily ascertain the comparative richness of any two given soils or manures: the most fertile will be the most absorbent and retentive.

Some manures increase the growth and vigor of plants, by stimulating their absorbent and assimilating organs. This will only be admitted by those, who, like myself, allow that plants are gifted with sensation: space cannot be permitted me to argue as I would to those who dissent from this opinion, but a few facts, as enumerated in my "Outlines of Botany," (Gard. Mag., Vol. II. p. 338,) will, I think, demonstrate that it is impossible to deny that they possess some degree of sensation. "The Venus's Fly Trap (Dionæa muscipula) has joined leaves, which are furnished on their edges with a row of strong prickles. Flies, attracted by honey which is secreted in glands on their surface, venture to alight upon them; no sooner do their legs touch these parts, than the sides of the leaves spring up, and locking their rows of prickles together, squeeze the insects to death. The well known Sensitive Plant (Mimosa sensitiva) shrinks from the slightest touch. Oxalis sensitiva and Smithia sensitiva are similarly irritable, as are the filaments of the stamens of the berberry. One of this sensitive tribe, Hedysarum gyrans, has a spontaneous motion; its leaves are frequently moving in various directions, without order or co-operation. When an insect inserts its proboscis between the converging anthers of a kind of Dog's bane (Apocynum androsæmifolium,) they close with a power usually sufficient to detain the intruder until his death." The more I study the phenomena of vegetation, the more I feel convinced of this point. How often have I heard a farmer reply to an observation upon the tardy growth of turnips,—"They will not grow apace, until their leaves are large enough for the wind to take hold of them;" and this is only because plants cannot be healthy and vigorous without exercise. Mr. Knight found that trees which were regularly shaken every day in his green-house, grew more rapidly and strong than others which were kept still.

The stimulating powers of excrementitious manures arise from the salts of ammonia they contain. Sir H. Davy found vegetation assisted by solutions of muriate of ammonia, (Sal ammoniac,) carbonate of ammonia, (Volatile salt,) and acetate of ammonia. Night-soil, one of the most beneficial of manures surpasses all others in the abundance of its ammoniacal constituents in the proportion of 3 to 1. It may be observed that the nearer any animal approaches to man in the nature of its food, the more fertillizing is the manure it affords. I have no doubt that a languishing plant, one, for example, that has been kept very long with its roots out of the earth, as the orange trees imported from Italy, &c. might be most rapidly recovered, if its stem and branches were steeped in a tepid, weak solution of carbonate of ammonia; and, when planted, an uncorked phial of the solution were suspended to one of the branches, to impregnate the atmosphere slightly with its stimulating fumes.

ART. 121.—*Proceedimgs of the New-York Horticultural Society.*

July 1.—Mr. Neale presented 1 doz. Gooseberries, w'g. 5 1-2 oz. Mr. Aymar also 1 do. 5 do.

Mr. Floy presented several different kinds of Peas, viz.: Knights' Tall Marrow, Dwarf Fan Bush, Tall Sugar do., Dwarf do.

Mr. Combault presented a specimen of Antwerp Hollyhock.

Mr. Smith a specimen of *Passiflora cærulea.*

Mr. Probyn exhibited some specimens of Carnation, viz.: Rose-flake and Clove—also of Hollyhocks: Yellow, Crimson, White.

Mr. Wm. Phelan large White Hollyhocks; Tree, Variegated, Pink, and Bizarre Carnations—very superior.

Mr. Floy presented Flowering specimens of Hibiscus rosa sinensis, Lantana camara, Hypericum monogynum, Spiræa lobata, Magnolia glanca, Coreopsis tinctoria, Mimulus moschatus, Santolina tomentoza—also of fruit, Polybotrya japonica.

Mr. Aymar presented specimens of Coreopsis tinctoria, Lychnis coronaria.

July 8.—Mr. Warner from his garden presented 3 Apricots, (Muirpark) quite ripe.

Mr. Cooke from Mr. Roger's garden, 2 doz. Gooseberries, wg. 9 oz.

Mr. Still presented a sample of Potatoes, very large, 6 wg. 21 oz. and quite ripe—English Black Currants, Coreopsis tinctoria, Clove carnation.

Mr. Oakley a specimen of Actæa spicata, (cohosh root.)

Mr. Cooper a specimen of Coriopsis tinctoria.

Mr. Wm. Phelan a specimen of Passiflora palmata, do. of Rose noisette.

Mr. Floy Flowering specimens of Climatis viticella flore pleno; Æsculus macrostachya; Plumbago capensis; Heliotropium peruvianum; Lonicera japonica; Jasminum glaucum; and Campanula trachelium flore pleno.

July 15.—Mr. Warner presented 14 ripe Apricots.

Mr. D. Phelan presented, from Dr. Hossack's garden, speimens of Bouvardia triphylla; Melaleuca hyperciifolia; Coreopsis senifolia; Hortensia vulgaris.

Mr. Floy exhibited specimens of Eugenia Iambcs; Clarkia pulchella; Mimulus guttatus; do. luteus var. a. rivularis.

Dr. Mitchell a specimen of Stachys germanica.

July 22.—Mr. Kinnersley presented 3 remarkably fine specimens of Impatiens balsamina flore pleno.

Mr. Cooper a specimen of the same.

Mr. Combault do. of Clematis.

Mr. Wm. Phelan Myrtus flore pleno; Volcameria japonica; Noisette rose.

Mr. Smith 9 Pears, (Gargonelle) ripe; 4 Plums, (Pardrigon) do.

July 29.—Mr. Smith presented 4 large specimens of Kohlrabbi.

Mr. Still 2 Egg Plants, very fine, 1st wg. 2 lb. 3 1-2 oz., 2d 2 lb. 2 oz.; also a basket of fine full sized Tomatoes.

Mr. Jno. Roberts 4 heads Celery, wg. 3 1-2 lb.

Mr. Jno. Curr a lot of Lima Beans, fit for the table.

Mr. Wm. Phelan some fine Hollyhocks and specimens of Hoya carnosa, Cassia occidentalis.

Mr. Parmentier a beautiful specimen of Lychnis grandiflora.

Mr. Floy Petunia nyctaginiflora, Acacia decurrens.

Mr. Wilson beautiful specimen of Yucca filamentosa, in full flower; Eupatorium purpureum, Hypericum kalmianum, Achillæa ptarmica, Lobelia siphilitica, Silphium perfoliatum, Cimicifuga serpentaria, Kerria japonica, Vitex agnus castus, Pardanthus chinensis.

To keep Pears.—In the north of Germany they keep winter pears packed in wooden boxes or casks, interlayered with clean sweet straw closely shut down and placed in a room out of the reach of frost. The fruit require examination every month, that those beginning to speck may be used or taken out.—[*T. A. Meyer. Clapton Nursery.*]

ART. 122.—*Critical Remarks on the Essays of "An American Horticulturist."*—Adressed to the Editors of the N. Y. Farmer and Horticultural Repository.

GENTLEMEN: In the May and June numbers of your work, (pages 109 and 133,) I observe two communications under the signature of "*An American Horticulturist*," surmounted with the following imposing title: "An account of the nature and state of American Horticulture, formed from a *long series* of *actual practice* and *careful observation*."—If these are fair specimens of their author's horticultural information and *refined* taste, he has undertaken a task for which he has not the requisite qualifications. It is to be expected that a writer who assumes so important an office as that of instructing others should at least possess the candor to state *facts*, and the *discretion* to confine himself to the particular points he attempts to illustrate—to say nothing of the nobler talent of discovering new principles of science, or presenting more forcible illustrations of old ones, by which to *add* something to the stock of knowledge already attained. But your correspondent, regardless of these restraints, and too enthusiastic to adopt a mode of calm, dispassionate reasoning, has entered the field with all the heroic determination of a furious veteran; and having at perfect command a most formidable artillery of "noisy" words and "well-poised" sentences, has no doubt for ever silenced the obnoxious "sneers" and "hootings" of "gross ignorance and vain bigotry of foreign conceit;" and by the matchless aid of his "poetical fancy," has soared *beyond* the *climax of horticultural glory*, regaling himself and his enraptured readers amid the fairy fields of "beans, squashes and pumpkins!"—One might suppose this undaunted "American Horticulturist" to be some political *place-hunter* rather than the sage knight of the spade and hoe, who wishes to benefit his countrymen by communicating correct and useful information.

Our author asserts, that, "owing to the superior congeniality of American climate, her garden products in many respects far exceed those of England;" and then, in a vaunting tone, exclaims, "What has she to compare with our Indian corn, our Lima beans, our winter squashes, our water-melons and pumpkins"!—If none of these productions can be brought to perfection in England, (which is not the case,) it by no means follows that American climate is superior in point of congeniality to that of England. To arrive at a correct decision of this question, it is necessary to have resided some time in both countries, thus to have had the advantage of "actual practice and careful observation." It may be asked in reply, how I know our "American Horticulturist" has not

availed himself of these advantages by a residence in England. To this I answer—if so, I cannot account for his ignorance or misrepresentation in regard to the production of the above-named articles in that country; for if he was ever there, he has seen, or might have seen, "squashes, cucumbers, pumpkins," &c. growing in that country in as great perfection as they do here, and in the open air too. That our climate is more favorable to the growth of some vegetables than that of England, is freely admitted; but taking it as a whole, it would be no difficult task to show it to be vast y inferior. I am really at a loss to conceive, after his "*long series* of *careful* observation," how he could so far lose sight of the truth as to suppose England to be wanting in "that congenial warmth of our American summers," which, as he says, subjects her to a vast expense and pains in bringing to maturity many fruits and vegetables, when the most ignorant plough-boy could inform him from his own observation, that for nearly three months of our summer, not only all garden vegetables suffer from the excessive heat, but also the hardy forest trees feel its blighting effect. That there are some fruits and vegetables which require expense and pains to bring to maturity in England, is true; but our author ought to have known that those fruits and vegetables were originally natives of tropical climates, and therefore more easily brought to perfection in this country whose hot scorching summers are not much less intense than those of their native clime. And not only is the excessive heat of our summer months detrimental to the cultivation of many of the most valued vegetables, but also the long continued and severe frosts of our winters prevent that constant supply throughout the year which can at almost all seasons be had in England, and for which she is indebted to the superior mildness of her climate.

He informs us it is only the sick and the great in England who partake of the finer kinds of vegetables. If by "finer kinds" he means "squashes and pumpkins," I can assure him that the "sick" and the "great" would rather throw such things to their hogs than eat them:—and I am bold in asserting, that the cottagers throughout England enjoy more of the luxuries of the garden than any of the farmers I have seen in the United States, and with as little expense, notwithstanding our author's statement to the contrary.

To whom he alludes as "hooting" and "sneering" at the Americans as being poor gardeners I know not: it would have been but fair to have mentioned the individuals, since so many foreigners follow the occupation of gardening in this country. I have heard it remarked, (and I think very justly,) that there are very few professed American gardeners; that all our markets, particularly in the early part of the season, are supplied by foreign gardeners, and consequently almost all our gen lemen of fortune employ them in preference to Americans.

Our "American Horticulturist" terminates his first essay with expressing his intention of taking a more "particular survey" of the subject in his next; and though at first view his last address might be considered as containing little else than a reiteration of his former "squash and pumpkin" production, yet I am disposed to acknowledge its claims to more originality of thought and expression, of erudition, candor and liberality, and abounding with equally delicate touches of the sublime and the beautiful.

BETULA ALBA.

ART. 123.—MISCELLANY.....*Agricultural Prospects—Belfast Botannic and Horticultural Garden—To purify Musty Cider—Cucumbers—Natural History of Nubia—French Philosophers—The Pita Plant—Sympathy between Roots and Branches—Cockroaches—Method of cleaning Silks, Woollens, and Cottons, without damage to their texture or color—Bamboo Manna—Treatment of Gold and Silver Fish—Benefits derived from Toads—The Farmer's Library—The Ant and the Aphis, or Plant Louse—Sage Cheese—To destroy Grubs and Wire-Worms—Of Retarding Vegetation by Shade—Of retarding Vegetation by the cold-house or ice-cold Chamber—Retarding the Ripening of Fruits—Method of lting Butter—A new kind of Cloth, fabricated by Insects—Growthand Manufacture of Silk—Toads as Ant-Eaters—Every family to make their own sweet Oil—Substitutes for Mulberry leaves—Application of Steam-Engines to Agricultural Purposes—Spontaneous Organization of Matter—Watering Plants for market—Method of killing Insects for the use of Naturalists—To prevent the bleeding of Vines.*

Cooperstown, N. Y. July 31, 1828.

Agricultural Prospects.—A gentleman who has travelled extensively this season, writes us, that the wheat crop has been seriously injured, in the northern and western counties of our states, by the uncommon wet season. In some counties, in consequence of a warm humid atmosphere, which has generated rust, there will not be more than half a crop; in others but two thirds of a crop, though the straw was uncommonly luxuriant and promising before the heavy rains of July.

Rye is less than a medium crop, and is uncommonly full of *ergot*. The consequence of this deleterious

excrescence to the population is much to be feared, scarcely a field is free from it; and in some fields the quantity is very great. The public health requires the utmost care in freeing the grain from this poison.

Corn, on warm and rich lands, presents a great volume of stalks, but unless the month of August is dry and warm, it is probable that a medium crop of grain will not be realized.

Grass was never greater in burthen; though its nutritive qualities will be less than usual; and it has suffered much in making, from almost diurnal rains.

The Oat crop is unusually promising. Potatoes are very fine where they have not been planted in wet soils.

Wheat Crop.—The following account of the state of this important crop in several of the states, is copied from the Philadelphia Price Current:

Virginia.—Middle and lower stations, and particularly on the rivers, the crop has suffered from rust, and it is estimated from one-fourth to one-third short of a fair average. In the upper districts an abundant crop, well secured.

Maryland.—On the eastern shore and lower counties of the western, the crops have suffered from rust and mildew, and prove materially short of an average; but in the upper western counties the crop is considered abundant, and well secured.

Delaware. In New Castle county there is a fair average crop. In Kent and Sussex not exceeding half a crop.

Pennsylvania.—In the eastern sections, extending to Blue Ridge, the crop is in general abundant, and of fine quality, and with the exception of Northampton county, where it was suffered to remain too long in the field, well secured. In the middle section, or Susquehannah county, and more particularly in Mifflin, Centre, and Huntingt n counties, very serious injury has been sustained by rust, and the crop reduced from one-third to one-half. On the west and north branches, the injury is believed not to be so serious.

New Jersey.—In the upper counties of New Jersey, the only important wheat districts of that state, the crops are fair, but not secured without some injury.

New York.—In the eastern districts fair average crops have been made. In the middle districts some injury has been sustained by rust, and some by wet weather, but there is nearly a fair average crop. In the important western district, very serious injury has been sustained, the extent of which is uncertain, as much grain was still exposed at last dates to unfavorable weather. It is apprehended the crop in that district will be diminished full one-third.

Connecticut.—In the small wheat districts of this state, the crop has sustained injury, but the extent not sufficiently ascertained. In the states east of Connecticut no wheat of importance is raised.

Florida.—We learn from the St. Augustine Herald, that the crops in all parts of the surrounding country are likely to be very plentiful—that the cotton plantations indicate an abundant gathering, and that the sugar cane will this year be a source of great profit to all who are engaged in the produce of that article.

On the whole, it is safe to conclude, that notwithstanding the favorable prospect in the last month, for a superabundant crop, in the wheat districts of the United States on the Atlantic, there is barely an average crop. It is worthy of remark, that in the great valley between the north and the south mountains, extending from New Jersey through Pennsylvania and Maryland, and into Virgima, the crop of wheat has not this year been subject to the injury sustained in a greater or less degree in the other districts, and has proved uncommonly abundant, of fine quality, and in general well secured, which compensates in a great measure for the deficiencies noted in other quarters.

The latest advices from Lower Canada lead us to apprehend that crops there have sustained serious injury, and will prove materially short of an average.

Belfast Botannic & Horticultural Garden.—A number of gentlemen of Belfast, and its vicinity, have formed a committee for establishing a garden; they have already purchased fourteen acres within a mile of Belfast. The objects are, a delightful place of resort; the cultivation of botanical science; a superior style of gardening; and the improvement of agriculture. Annual subscribers, of half a guinea each, shall have free access to the garden; and with that liberal hospitality characterestic of the country, the greatest facility is to be given to the admission of strangers. —*Gard. Mag.*

To purify musty Cider.—A few slices of the red beet, put into a barrel of musty cider will deprive it of its disagreeable taste and smell, as well as prevent its becoming vapid or acid.

Natural History of Nubia.—M. Riffaud, of Marseilles, has lately returned to his native city from Egypt, bringing with him, 1. a vast collection of plants, collected during his travels in Nubia and Egypt; 2. drawings of the fishes, insects, and testaceous animals found in the Nile and its neighborhood: 3. nearly 1000 drawings of mammalia, reptiles, birds, and insects, partly found in Nubia and partly in Libia and Egypt; 4. a series of drawings of remains of antiquity in Nubia and Egypt, and 160 hieroglyphical inscriptions collected among the ruins; 5. agricultural and chirurgical instruments, articles of dress and ornaments of the natives, topographical plans, meteorological observations. M. Riffaud has also kept a regular journal of his travels. He is now busy in arranging and classifying his numerous materials, preparatory to committing the important work which is to embrace them to the press. (*For. Quar Jour.*)

The French Philosophers of the present age have acquired great and deserved fame by their splendid discoveries in physiology, geology, and comparative anatomy; but as regards the natural system, or that which is to develope the plan of creation, it is not too much to say, that the book of nature, to them, has been hermetically sealed. Their discoveries will, indeed, remain, for these regard things which are immutable; but their systems and theories, formed either without any reference to religion, or in direct opposition to its greatest truths, are even now fast tumbling to decay. They may, indeed, be remembered, but only as lamentable instances of the infirmity of our nature, which, taking not God for its guide, perverts his works to inculcate the baneful principles of materialism and infidelity. *Swainson.*

The Pita Plant.—We have succeeded in making some seeds of the pita plant, nearly allied to the genus Bromelia, and valuable for the strength and durability, no less than the abundance of its fibre, which the Spanish writers report to be superior either to flax or hemp, germinate by previous maceration in water, till they began to swell. The seed, however, even with this preparation, almost exhausted our patience before the plants appeared above ground. The young plants, which are as yet of singularly slow growth, resemble in appearance young pine-apple plants, but, from the specimen I received, do not belong to the genus Bromelia, but constitute, as I am rather inclined to imagine will prove to be the case, a new and hitherto undescribed genus. I am promised some living plants, arrived at maturity, packed in charcoal powder, for whose arrival I shall look with much anxiety, as the progress of the seedlings is so slow as to leave little hope of seeing the flower under five or six years.—*William Hamilton, Oxford-Place, Plymouth,* Feb. 17, 1826.

Sympathy between Roots and Branches.—Sir H. Steuart's physiological knowledge agrees with the first authorities of the present day. From this fund he has drawn judiciously, and, on one fact elicited by that science, has founded one chief trait of his management, and to which he attributes much of his success. This fact is, that branches and roots are correlative parts of the plant, and that any damage sustained by the one must affect the other. That damage at the root hurts the branches is, and always has been, the general belief; but that severely pruned branches weaken the roots has never been so generally understood as to be regarded as a rule of practice.

This, nevertheless, is perfectly consistent with our ideas of vegetable economy, as the action of both root and head must be reciprocal, and no developement of the one can take place without the assistance of the other. In every tree there is a store of expanding powers, a previous accumulation of vegetable life which serves for future extension and developement: and, therefore, to lessen this by violence, either to root or branches, must weaken the whole system of of the plant. Hence, our author argues, that to deprive a tree of its principal branches is also to deprive the root of that stimulus on which it depends. [*Rev. of Steuart's Planters Guide.*]

Cockroaches.—A respectable professional gentleman informed us yesterday that he has recently discovered that the spirits of turpentine is an effectual remedy against the depredations of cockroaches.

He recommends to put a little of it upon the shelves and sides of your book cases, bureaus, or other furniture, in which they take shelter, which may readily be done with a feather, and these troublesome insects will soon quit, not only the furniture but the room. The remedy is simple and easily obtained by every person who wishes it. It is not unpleasant to the smell—soon evaporates, and does no injury to furniture or clothing. This is a valuable discovery, if it proves, in all cases, as effectual as our informant assured us it did in his house.—*Louisiana Adv.*

Method of cleaning Silks, Woollens, and Cottons, without damage to their texture or color.—Grate raw potatoes to a fine pulp in clean water, and pass the liquid matter, through a coarse sieve, into another

vessel of water; let the mixture stand still till the fine white particles of the potatoes are precipitated; then pour the mucilaginous liquor from the fecula, and preserve the liquor for use. The article to be cleaned should then be laid upon a linen cloth on a table, and having provided a clean sponge, dip it into the potato liquor and apply it to the article to be cleaned, till the the dirt is perfectly separated; then wash it in clean water several times. Two middle sized potatoes will be sufficient for a pint of water.

The coarse pulp, which does not pass through the sieve, is of great use in cleaning worsted curtains, tapestry, carpets, and various other coarse goods. The mucilaginous liquor will clean all sorts of silk, cotton, or woollen goods ,without hurting or spoiling the colour; it may be also used in cleaning oil paintings, or furniture that is soiled. Dirtied painted wainscoats may be cleaned by wetting a sponge in the liquor; then dipping it in a little fine sand, and afterwards rubbing the wainscoat with it.—(*New England Farmer.*)

Bamboo Manna.—Tabasheer, (the Arabic word for liquor) is a very remarkable substance, occurring only in particular situations and in particular plants, and chiefly in the joints of the bamboo. It is called the Hindoo physician's bamboo manna, and milk, sugar, or camphor of bamboo, and appears to be a secretion from the joints of the reed in a state of disease, malconformation, or fracture. The secretion is made in the cavity within the reed, and on the upper and under surface of the joints; the ordinary quantity produced by a disorganized joint or internode, is four or five grains. The chemical composition of tabasheer is undetermined; it is pure silex, according to some; and silex 70, and potash 30, according to others. According to an analysis by Dr. Turner, Professor of Chemistry in the University of London, in the April number of Brewster's Journal, it consists of silica, containing a minute quantity of lime and vegetable matter. The physical properties of tabasheer are remarkable; its refractive power is lower than that of any other body, when solid or fluid; with certain oils, which it imbibes, it becomes as transparent as glass; it absorbs water, and becomes as white and opaque as if it had been covered with white lead. In India it is used medicinally as a tonic, or chewed with betel, to renovate the constitution. It is also highly prized as an aphrodisiac. Silex, it is well known, exists in wheat straw, and in the stems of other grasses; physiologists, in general, consider it as a foreign ingredient, "an intruding element which the plant had derived from the peculiar soil in which it vegetated;" but Dr. Brewster, from certain experiments made with Equisetum hiemale, is of opinion that the silex is an integral portion of the plant itself.—*Brewster's Journal.*

Treatment of Gold and Silver Fish, in answer to several querists.—These beautiful objects of the animal kingdom, though long ago introduced into Europe from China, their native country, seldom breed in such numbers as they might be expected to do. It has been lately discovered that in ponds heated by the waste water discharged from steam factories, the gold and silver fish breed abundantly. From this circumstance it has been suggested, that, as heating hothouses by warm water is now so generally adopted, a portion of this, led occasionally into a garden basin, would keep the water in such a temperament as would not only always be agreeable to the fish, but promote their breeding. J. H.—*Loudon's Mag.*

Benefits derived from Toads.—Few gardeners are aware of the very great good which results from preserving these unsightly but useful animals in gardens. Their natural food consists entirely of slugs, worms, snails, flies, and, in short, of all those vermin which the gardener is most anxious to get rid of; and yet how many are there who ignorantly and wantonly destroy them! I tell every new gardener who comes to me, that my toads are my best friends. I encourage both them and frogs. Thus my garden, formerly swarming with slugs, &c., is now comparatively clean. J. W.—*Loudon's Mag.*

The Farmer's Library.—A series of practical tracts on farming, gardening, and domestic economy, are announced for publication by Mr. Murray. The object is stated to be, to diffuse a more general acquaintance with the principles of agriculture, supply the cultivators of the soil with a store of useful and agreeable information, and facilitate the general adoption of the most approved practices of husbandry, and a superior style of housewifery and cookery.—*Ib.*

The Ant and the Aphis, or Plant Louse.—Mr. Carpenter happening once to beat down a number of aphides out of a stunted oak tree, at the foot of which was an ants' nest, was very much surprized at seeing soon afterwards the ants busily employed in carrying up the aphides and carefully replacing them again upon the leaves of the tree; they feeding again upon the honey-dew, which, it is well known, is produced by the aphis. *Gill's Tech. Repos.*

Sage Cheese.—To make sage cheese, take the top of young red sage, and having pressed the juice from them by beating in a mortar, do the same with the leaves of spinach, and then mix the two juices together. After putting the rennet to the milk, pour in some of this juice, regulating the quantity by the degree of colour and taste it is intended to give the cheese. As the curd appears, break it gently, and in an equal manner, then emptying it into the cheese vat let it be a little pressed in order to eat mellow.

Having stood for about seven hours, salt and turn it daily for four or five weeks, then it will be fit for the table. The spinach besides improving the flavour and correcting the bitterness of the sage, will give it a much more pleasing color than can be obtained from sage alone.—*Anon.*

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To destroy Grubs and Wire-worms.—Sir—Observing in the Gardener's Magazine for January last, (Vol. III. p. 381,) that "A Surrey Reader" complains that grubs and wire-worms trouble him much, by "destroying from 60 to 100 cabbage plants per night," I am induced, as no one else steps forward to assist him, to communicate to you the following, published by the Highland Society :—

Take tobacco leaves, cut them small, and make a strong infusion of them by pouring hot water upon them in a tub. The infusion must not be boiled, as that would carry off by steam a great part of the most valuable principle, the essential oil of the tobacco. When this infusion is cold, dissolve in it one or two pounds of common gum arabic; and, when the latter is dissolved, a pound or more of flour of sulphur may be added, particularly if it is intended to give a smart washing to wall fruit trees. It is conceived that from January to March (if the weather be mild) is the best time for the application of the above infusion to wall fruit trees, and to all kinds of gooseberry and currant bushes, previously pruning them, and weeding clean round their stems. Some days after the first washing, which may be done with a watering pot or garden engine, it will be beneficial to prepare a portion of the infusion with an additional quantity of gum arabic, to be applied with the brush to the stems of the bushes, at least for a foot or more above the ground. The air of the atmosphere will generally keep the gum moist, and any vermin that may rise from the earth in the course of the spring will be arrested by the gum, and the tobacco will kill them effectually. There is one species of grub that never quits the ground until it becomes a kind of butterfly. This species destroys cabbages and cauliflowers by attacking the roots about an inch below the surface of the earth. It will, therefore, be necessary, before these vegetables are hoed up, to give a small portion of the infusion to each plant from the watering pot; and it is further recommended, when these plants are taken up to be transplanted, that t h roots be put into the infusion for a few minutes before they are dibbled into the earth. It is wonderful how much infusion promotes the vigor of vegetation, when it gets to the root of any plant. Vipers, which are common in gardens in England and the south of Scotland, will soon forsake the garden in which this infusion is used freely. The essential oil of tobacco, if applied to the mouth of a viper upon the tip of a small rod, will kill the reptile to a certainty. This oil will kill the most poisonous snakes of warm climates. The tobacco leaf yields a considerable quantity of essential oil, which is rea ily obtained by smoking tobacco in a nipple-glass. The oil will condense in the bulb of the glass; and it is so extremely caustic, that it will destroy the epidermis when it touches the human skin."—*Loudon's Mag.*

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Of retarding Vegetation by shade.—The simplest mode of retarding vegetation is, by keeping plants constantly in comparative shade in the spring season. This is either to be done by having them planted in the north side of a wall or house, or sloping bank, hill or other elevation; or by moving them there in pots; or by placing a shade or shed over, on the south side of the vegetables to be retarded. Where the object of retarding vegetation is to have the productions in perfection later in the season, the first method is generally resorted to; but where vegetation is only retarded that it may burst forth with greater vigor when the shades are removed, then either of the others is preferble. Trees on an east and west espalier-rail, shaded from the sun from February to the middle of May, will be later of coming into blossom, and therefore less likely to have their blossoms injured by frost.—*Encyc. Gard.*

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Of retarding Vegetation by the cold-house or ice-cold Chamber.—This method is more particularly applicable to plants in pots, especially fruit-trees, and might be made a practice of importance. Vegetation may in this way be retarded from March to September, and the plant removed at that season by proper gradations, to a hot-house, will ripen its fruit at mid-winter. It is even alledged by some gardeners, who bave had experience in Russia, that the vegetation of peach-trees may be so retarded an entire year; and that afterwards, when the plant is removed into spring or summer heat, in the January of the second year, its vegetation is most rapid, and a crop of fruit may be ripened in March or April

with very little exertion on the part of the gardener. The earliest potatoes are obtained from tubers which have been kept two seasons; that is, those are to be planted which have been produced the season before the last; or, the produce of summer 1821, in December 1822.—*Ib.*

Retarding the ripening of fruits by excluding oxygen.—M. Berard, of Montpelier, in an essay on the ripening of fruits, which gained the prize of the French Academy of Sciences in 1821, found that the loss of carbon is essential to the ripening of fruits; that this carbon combines with the oxygen of the air, and forms carbonic acid; and that when the fruit is placed in an atmosphere deprived of oxygen, this function becomes suspended, and the ripening is stopped. Hence it results, that most fruits may be preserved during a certain period, by gathering them a few days before they are ripe, and placing them in an atmosphere free from oxygen. The most simple process for effecting this consists in placing at the bottom of a bottle, a paste formed of lime, sulphate of iron, and water; then introduce the fruit so as they may rest detached from the bottom of the bottle, and from each other, and cork the bottle and cover it with cement. Peaches, plums, and apricots have been kept in this way for a month; pears and apples for three months. Afterwards they will ripen perfectly by exposure to the air.—*Ib.*

Method of salting butter.—Take of sugar one part, and clean salt two parts; beat them well together and put it by for use. To every pound of butter, (when freed from the butter-milk,) take one oz. of the preparation and mix it thoroughly together. Butter salted in this manner and put down in tubs with a little melted butter poured over the surface, to fill every vacuity, before the top is put on, will keep for many years.—(*N. E. Farmer.*)

A new kind of Cloth, fabricated by Insects.—The larvæ of the butterfly, Tinea punctata, or T. padilla, have been directed by M. Habenstreet, of Munich, so as to work on a paper model suspended from the ceiling of a room. To this model he can give any form or dimensions, and he has thus been enabled to obtain square shawls, an air balloon four feet high and a woman's complete robe, with the sleeves, but without seems. One or two larvæ can weave a square inch of cloth. A great number are, of course, employed, and their motions are interdicted from the parts of the model not to be covered by oiling them. The cloth exceeds in fineness the lightest gauze, and has been worn as a robe over her court dress by the Queen of Bavaria. (*Newton's Journal of the Arts*, Dec. 1827.)—We have no doubt the same object might be effected by directing the labors of the larvæ of various British moths or butterflies, or perhaps spiders; and we should be glad to hear of some reader of leisure attempting such a thing. M. Samonelle, Blackfriars Road, we believe, could give instructions, and supply eggs and larvæ.—*Loudon.*

Growth and Manufacture of Silk.—The Editor of the Western Review is enthusiastic in his predictions of the rapid increase of this article of our home manufacture. He says, that "The impulse is excited. Enquiry is afloat.—Instead of Gros de Naples and Florence silks, and Canton and Nankin crapes, we should be glad to live to see our ladies clad in Cincinnati lustrings, in Kentucky levantines, and Mississippi Indiana and Louisiana Persian silks. Our fair might then, with something more of palliation, contemplate themselves in the mirror, or in the transparent fountain, in the splendour of a vesture wrought and colored by their own industry. Brilliance, beauty, and Industry would enable them to bind their victims by a three-fold cord, not to be broken."

Toads as Ant-eaters.—In the autumn of last year, a pit, wherein I grew melons, was so much infested with ants, as to threaten the destruction of the whole crop; which they did, first, by perforating the skin, and afterwards eating their way into the fruit; and after making several unsuccessful experiments to destroy them, it occurred to me that I had seen the toad feed on them. I accordingly put about half a dozen toads into the pit, and in the course of a few days, scarcely an ant was to be found. *T. Symons, Cornwall.*

Potato Flour.—A Dorsetshire farmer, who made some experiments in the preparation of this article, states as the result, that a bag of potatoes (240 lbs.) will produce 60 lbs. of flour; and that plain puddings made with two thirds potato flour, and one third wheat flour, are even superior to those made wholly of the latter. On ordinary lands, 100 bags will be produced from an acre, so that 600 lbs. of flour may be obtained from an acre of land. Potato flour is now much used in Scotland.—*Anon.*

Cucumbers are rendered more wholsome by slicing them into a basin of cool spring water.

Every family to make their own sweet Oil.—This may easily be done by grinding or beating the seeds of the white poppy into a paste, then boil it in water and skim off the oil as it rises; one bushel of seed weighs fifty pounds, and produces two gallons of oil. Of the oil sold as sweet olive oil, one half is oil of poppies. The poppies will grow in any garden—it is the large headed white poppy, sold by apothecaries. In France and Flanders large fields are sown with poppies for the purpose of expressing oil from their seeds.

When the seeds are taken out, the poppy head when dried is boiled to an extract, which is sold at two shillings sterling per ounce, and is to be preferred to Opium. Large fortunes may be acquired by the cultivation of poppies. [*Eng. Publication.*]

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Substitutes for Mulberry leaves.—Dr. Sterler, of Bavaria, has found that the leaves of Acer tartaricum, a hardy tree, common in the nurseries, may not only be substituted for the mulberry, but even preferred to it by silk-worms. Mr. Edward Herard, chemist, of London, has also shown, in a letter in Mr. Gill's *Technological Repository* for February, 1828, that worms, fed upon a particular variety of lettuce, yield an equal quantity of silk with those reared on the mulberry leaf.—*Mech. Mag.*

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Application of Steam-Engines to Agricultural Purposes.—In farming there are few things that admit of the employment of steam power with economy; but, where it is employed at all, it is an advantage to apply it to as many purposes as possible. The species of work to which it is susceptible of application are, threshing and winnowing grain, chaff-cutting, grinding bones for manure, and to grinding corn and fatting cattle and for family uses. The boiler may be further applied to steam food for cattle. No other objects occur to me except to notice that for drainage in fenny districts, and for irrigation in others, it is worthy of the land owner's consideration whether the application will not repay the expense.—*Treadgold's Treatise on the Steam-Engine.*

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Spontaneous Organization of Matter.—M. Bory de St. Vincent has occupied himself for some time past with a variety ot microscopic observations, having for their object to prove the natural tendency of matter to become organised. Observing the appearances successively presented in water exposed to light he thought he saw, for the first time, matter assume the aspect of a simple muscosity, without colour or form. If the water contains any animal substance, it produces a pellicle of this mucosity at the surface, then becomes turbid, and discloses an infinity of living animals, if we may so call those monads, which after being magnified a thousand times, are not so large as the point of a needle, and which move in all directions with prodigious velocity. This is what M. Bory names matter in its living state. When the water is exposed to the air and light, there quickly forms what is named the green matter of Priestley which many observers have supposed to be the first state of certain confervæ or plants of a like nature. M. Bory thinks that it is a combination of a more general form and only susceptible of entering into the composition of these plants, as well as of the animalcules which issue from it and which produces them. He names this combination matter in the vegetative state. It is by that the infusory animals are rendered green. Those that colour oysters, according to M. Gaillon's observations, produce this effect, as M. Bory says, only because they are themselves colored with the green matter. It colors, in the same manner, the water and the shells of these oysters; and it would not be imposible to find some tinged directly by this matter, without any animalcules having penetrated into them. (*Jam. Phil. Jour.*)

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Watering Plants for market.—Watering gives vegetables long exposed a fresher color and a more attractive appearance; but repeated waterings are highly pernicious, as they neutralize the natural juices of some, render others bitter, and make them all vapid or disagreeable. This practice has, however, been long persisted in, and is not likely to be left off, till the dealers find it for their interest to attend more to the quality than the appearance of their vegetables. —*Scotsman.*

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Method of killing Insects for the use of Naturalists.—The following method is by M. Ricord:—The insect is to be fixed on a piece of cork, and put under a jar or vessel with a little ether; the latter being placd either in a capsule, or on the plate on which the jar or glass is placed: the vessel should apply closely, that the vapor of the ether may be retained, and the air within be prevented from changing its place. The insect thus immersed in the ethereal atmosphere will soon die, without having time to hurt its form or appearance by violence. (*Bul. Un.*)

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To prevent the bleeding of Vines.—If a piece of moistened bladder be folded over the end of the vine which is cut, and then bound tightly round with packthread, it will effectually prevent bleeding.